REMARKS

The Examiner's attention to the present application is noted with appreciation.

The Examiner objected to a priority claim under 35 U.S.C. § 120. Respectfully, the basis of the priority claim is one to a provisional patent application filed no more than 12 months before under 35 U.S.C. § 119(e)(1). The basis of the claim has been clarified by amendment of the specification, above.

The Examiner objected to the specification, which has been corrected by amendment herein.

The Examiner rejected claims 13, 14, 26, and 27 under 35 U.S.C. § 112, second paragraph, as indefinite. The indefinitenesses noted have been corrected by amendment, above.

The Examiner rejected claims 1, 2, 4-10, 20, 21, 24-26, 33, 34, and 36-42 under 35 U.S.C. § 102(b) as anticipated by Lewandowski et al. ("Lewandowski"). Respectfully, the rejection is traversed because Lewandowski is not an enabling disclosure. Lewandowski is a short abstract stating in pertinent part merely that micron-sized particles can be guided through hollow optical fiber by the single-beam gradient force from a diode laser. One of ordinary skill in the art would not have been able without undue experimentation to create a working system according to the invention as disclosed in the specification.

The Examiner rejected claims 1-26 and 33-42 under 35 U.S.C. § 102(b) as anticipated by Renn et al. of November 1998 ("Renn-1998"). The rejection is traversed in that Renn-1998 was published after the priority date of the present application (September 30, 1998).

The Examiner rejected claims 27, 28, and 30-32 under 35 U.S.C. § 102(b) as anticipated by Renn et al. of 1999 ("Renn-1999"). The rejection is traversed in that Renn-1999 was published after the priority date of the present application (September 30, 1998).

The Examiner rejected claim 29 under 35 U.S.C. § 103(a) as unpatentable over Lewandowski in view of Renn-1999. Respectfully, the rejection is traversed for the reasons stated above as to the

anticipation rejections.

The Examiner rejected claims 3, 11-19, 22, 23, and 35 under 35 U.S.C. § 103(a) as unpatentable over Lewandowski. Respectfully, the rejection is traversed for the reasons stated above as to the anticipation rejections.

Being filed herewith is a Petition for Extension of Time to June 5, 2002, with the appropriate fee. Authorization is given to charge payment of any additional fees required, or credit any overpayment, to Deposit Acct. 13-4213. A duplicate of this paper is enclosed for accounting purposes.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached paper is captioned "**Version with Markings to Show Changes Made**." An earnest attempt has been made to respond to each and every ground of rejection advanced by the Examiner. However, should the Examiner have any queries, suggestions or comments relating to a speedy disposition of the application, the Examiner is invited to call the undersigned.

Reconsideration and allowance are respectfully requested.

Respectfully submitted,

PEACOCK, MYERS & ADAMS, P.C.

By:____________________
Jeffrey D. Myers
Reg. No. 35,964
Direct Dial: (505) 998-1502

Attorney for Applicant
P.O. Box 26927
Albuquerque, New Mexico 87125-6927
Phone: (505) 998-1500
Fax: (505) 243-2542

Date: May 31, 2002

Customer No. 005179
\\JDM\DOCS\AMDS\Optomec\621_AMD.doc

COPY OF PAPERS
ORIGINALLY FILED

PATENT Ser. N . 09/574,955

Version with Markings to Show Changes Made

In the Specification:

Please amend the paragraph at page 1, lines 4-5, to read as follows:

This application claims the benefit of the filing of [priority to] U.S. Provisional Patent Application Serial No. 60/102,418, entitled "Direct-Writing of Materials by Laser Guidance", filed on September 30, 1998, and the specification thereof is incorporated herein by reference.

Please amend the paragraph at page 9, lines 6-29, to read as follows:

As follows from the theoretical basis and experimental results described above, since an intense laser beam inside the hollow core fiber has a proper profile and, therefore, the trapped particle is damped by the fluid inside the fiber, the particle is confined inside the laser beam and can be transported with the beam without bouncing off the inside walls of the fiber. The size of the particles capable of being guided that way can vary from about 50 nm to about 10 μm. The higher the refractive index of a particle [is], the larger the optical forces [are] exerted on the particle, and, consequently, the easier it is to manipulate and transport such a particle. Besides water droplets and polystyrene spheres, the substances guided through the fibers were salt, sugar, KI, CdTe, Si and Ge crystals, Au and Ag particles with sizes ranging from about 10 nm to about 10 μm using a 0.5 W laser and a 17 μm inner-diameter air-filled fiber. Listed in Table 1 in Figure 10 are the materials manipulated by laser guidance on a variety of substrates. Since metal particles, such as Au and Ag, for example, usually reflect light well and absorb very little light, larger metal particles can be transported along the hollow core fibers faster. Moreover, since the use of hollow core fibers allows manipulation of a wide variety of particles and virtually opens up the non-

contact, non-mechanical way of transporting numerous materials, living cells can be manipulated and guided through the fibers in liquid environments. Examples of the results of fiber guiding for several types of dielectric particles are shown in FIGS. [8] 7(a)-(d). Each image of a short section of fiber in FIG. [8] 7 is captured on a CCD camera. FIGS. [8] 7(a)-(c) show snapshots of polystyrene spheres guided in a water filled fiber. FIG. [8] 7(d) shows an example of a particle guided in an air filled fiber. The track of scattered light in FIG. [8] 7(d) indicates a trajectory of a 1 μm water droplet in a 20 μm diameter fiber.

Please change the Abstract to read as follows:

A method and device for using laser light to trap non-atomic particles optically within a hollow region of a hollow core optical fiber [are disclosed]. [Also described are a method and device for flexibly transporting the trapped particles along the fiber over long distances. The present invention allows to manipulate and guide particles made of a wide variety of materials, including the biological tissue and aerosols, along the optical fibers and deposit the materials on various substrates. The laser guiding device comprises a laser beam source generating a laser beam, which is directed to an entrance of a hollow core optical fiber by a focusing lens. A source of the particles to be guided through the fiber provides a certain number of particles near the entrance to the fiber. The particles are then drawn into the hollow core of the fiber by the focused laser beam, propagating along a grazing incidence path inside the fiber. Laser induced optical forces generated by scattering, absorption and refraction of the laser light by a particle traps the particle close to the center of the fiber and propels it along. Any micron-size material, including solid dielectric, semiconductor and solid particles as well as liquid solvent droplets, can be trapped in laser beams and transported along optical fibers due to the net effect of exertion of these optical forces. After traveling through the length of the fiber, the particles can be either deposited

on a desired substrate or into an analytical chamber, or dealt with depending on the goal of a particular application.]

<u>In the Claims</u>:

Please amend the claims as follows:

13. (Amended) The method of Claim 11, further comprising [using the steps of Claim 8 to deposit] <u>depositing</u> a plurality of particles <u>of one material</u> onto the substrate.

26. (Amended) The method of Claim [20] <u>25</u>, wherein the solid portion is the material deposited onto the substrate.

27. (Amended) A method of confining a particle inside a through channel of an optical conductor, the method comprising:

<u>directing a first laser beam into the channel</u> through a first opening of the optical conductor;

directing a second laser beam into the channel through a second opening of the optical conductor; and

confining the particle inside the channel by causing the first and the second laser beams to propagate toward each other inside the channel.